AF/2188

OIPE JC 1341 JUL 07 2005 PATENT & TRADEMARK OFFICE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application No.	10/027397
Filing Date	December 19, 2001
First Named Inventor	RANKIN, et al
Art Unit	2188
Examiner Name	Song, Jasmine
Total Number of Pages in This Submission	24
Attorney Docket Number	42390P12338

ENCLOSURES *(check all that apply)*

- [X] Fee Transmittal Form
  - [X] Fee Attached
- [ ] Amendment / Response
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
  - [ ] PTO/SB/08
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Basic Filing Fee
  - [ ] Declaration/POA
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s)
- [ ] After Allowance Communication to Group
- [ ] Appeal Communication to Board of Appeals and Interferences
- [X] Appeal Communication to Group **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [X] Other Enclosure(s) *(please identify below):*

- Check in the amount of $500.00
- Return Receipt Postcard

Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Gregory D. Caldwell, Reg. No. 39,926 BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP
Signature	
Date	

CERTIFICATE OF MAILING/TRANSMISSION

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Typed or printed name	**Rachael L. Brown**		
Signature		Date	**July 5, 2005**

Based on PTO/SB/21 (04-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wlr) 06/04/2004.
SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

FEE TRANSMITTAL for FY 2005

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27.

TOTAL AMOUNT OF PAYMENT ($) 500.00

Complete if Known	
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METHOD OF PAYMENT *(check all that apply)*

☒ Check ☐ Credit card ☐ Money Order ☐ None ☐ Other (please identify): _____

☐ Deposit Account Deposit Account Number: 02-2666 Deposit Account Name: Blakely, Sokoloff, Taylor & Zafman LLP

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☒ Charge any additional fee(s) or underpayment of fee(s) under 37 CFR §§ 1.16, 1.17, 1.18 and 1.20. ☒ Credit any overpayments

FEE CALCULATION

1. EXTRA CLAIM FEES

			Extra Claims		Fee from below		Fee Paid
Total Claims	27	- 27* =	0	x	50.00	=	$0.00
Independent Claims	5	- 5* =	0	x	200.00	=	$0.00
Multiple Dependent						=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	50	2202	25	Claims in excess of 20
1201	200	2201	100	Independent claims in excess of 3
1203	360	2203	180	Multiple Dependent claim, if not paid
1204	300	2204	150	**Reissue independent claims over original patent
1205	300	2205	150	**Reissue claims in excess of 20 and over original patent

***or number previously paid, if greater, For Reissues, see below*

SUBTOTAL (1) ($) 0.00

2. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet.	
2053	130	2053	130	Non-English specification	
1251	120	2251	60	Extension for reply within first month	
1252	450	2252	225	Extension for reply within second month	
1253	1,020	2253	510	Extension for reply within third month	
1254	1,590	2254	795	Extension for reply within fourth month	
1255	2,160	2255	1,080	Extension for reply within fifth month	
1401	500	2401	250	Notice of Appeal	
1402	500	2402	250	Filing a brief in support of an appeal	500.00
1403	1,000	2403	500	Request for oral hearing	
1451	1,510	2451	1,510	Petition to institute a public use proceeding	
1460	130	2460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
1809	790	1809	395	Filing a submission after final rejection (37 CFR § 1.129(a))	
1810	790	2810	395	For each additional invention to be examined (37 CFR § 1.129(b))	
Other fee (specify)					

SUBTOTAL (2) ($) 500.00

SUBMITTED BY

Complete (if applicable)

Name (Print/Type)	Gregory D. Caldwell	Registration No. (Attorney/Agent)	39,926	Telephone	(503) 439-8778
Signature				Date	07/05/05

Based on PTO/SB/17 (12-04) as modified by Blakely, Sokoloff, Taylor & Zafman (wlr) 12/15/2004.
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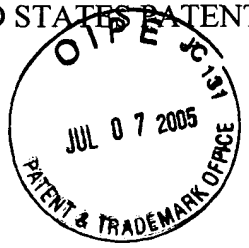
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



In re patent application of:

Linda Rankin, et al. for
Intel Corporation

Serial No.:	10/027,397	Group Art Unit:	2188
Filed:	December 19, 2001	Examiner:	Jasmine Song

FOR: **HOT PLUG CACHE COHERENCY INTERFACE METHOD AND APPARATUS**

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicant (hereinafter Appellant) submits this appeal brief, thus perfecting the notice of appeal filed on May 4, 2005.

The required headings and subject matter follow.

(i) Real party in interest.

This case is assigned of record to Intel Corporation, who is the real party in interest.

(ii) Related appeals and interferences.

There are no known related appeals and / or interferences.

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(iii) Status of claims.

Claims 1-27 are pending in the case, and claims 1-27 stand rejected. The rejection of claims 1-27 is being appealed.

(iv) Status of amendments.

No amendments were filed subsequent to the final rejection.

(v) Summary of claimed subject matter.

Claim 1 is related to a method comprising receiving a request to remove a hot plug module 110 from a running computing device 100. See, FIGS. 2-5 for examples of hot plug modules and corresponding disclosure at paragraphs [0019]-[0027]. Further, see step 902 of FIG. 9A and paragraph [0049]. The method further comprises updating a snoop filter 640 (FIG. 6) of the running computing device 100 to cease snooping of the hot plug module. See step 916 of FIG. 9B and paragraph [0055].

Claim 7 is related to midplane 120, 600 comprising a plurality of couplers 122 to detachably couple hot plug modules 110 to a running computing device 110. See, FIGS. 1 and 6. The midplane 120, 600 further comprises a switch 624 to interconnect the plurality of couplers 122 and to cease issuing snoop transactions to a coupler 122 of the plurality of couplers 122 associated with a hot plug module 110 to be removed from the running computing device 100. See, FIG. 6 and paragraphs [0028]-[0037].

Claim 13 is related machine readable medium for processing snoop transactions comprising a plurality of instructions that in response to being executed result in a computing device 100 causing caching agents (e.g. processors 230, and I/O hub 510 of paragraph [0032])

associated with a coupler 122 of the computing device 100 to write back modified lines to a memory 240 of the computing device 110. See, paragraph [0048] regarding machine readable medium. The machine readable medium further comprises instructions that result in a computing device 100 updating a valid vector 646 to indicate that the coupler 122 is no longer associated with one or more valid caching agents (e.g. processors 230 and I/O hub 510). See paragraphs [0036]-[0037] for details regarding an embodiment of a valid vector.

Claim 17 is related to computing device comprising a memory 240, and a hot plug module 110 comprising a coupler 112 and one or more caching agents (e.g. processors 230 and I/O hub 510) having cached lines of the memory 240. The computing device may further comprise a midplane 120 comprising a coupler 122 detachably coupled to the coupler 112 of the hot plug module 110 and a snoop filter 640 to track the cached lines of the one or more caching agents (230, 510). The computer device further comprises a processor 230 coupled to the hot plug module 110 via the midplane 120 wherein the processor 230 causes the snoop filter 640 to mark the one or more caching agents 230, 510 as invalid snooping agents in response to a request to remove the hot plug module 110.

Claim 22 is related to a snoop filter 640 comprising storage 644 to store coherency information for lines cached by caching agents 230, 510 of hot plug modules 110. The snoop filter further comprises a controller 642 to update the coherency information in response to a request to remove a hot plug module 110 from a computing device 100. See, FIG. 6 and paragraphs [0031]-[0036].

(vi) Grounds of rejection to be reviewed on appeal.

Claims 1- 27 stand rejected under 35 U.S.C. § 102(e), as being anticipated by Bealkowski et al. US Patent No. 6,330,656.

(vii) Argument.

The rejection of claims 1- 27 under 35 U.S.C. § 102(e), as being anticipated by Bealkowski et al. US Patent No. 6,421,702 is in error and should be reversed.

As is well-established, in order to successfully assert a *prima facie* case of anticipation, the Official Action must provide a single prior art document that includes every element and limitation of the claim or claims being rejected. Therefore, if even one element or limitation is missing from the cited document, the Official Action has not succeeded in making a prima facie case.

Claim 1

Appellant's claim 1 requires updating a snoop filter of the running computing device to cease snooping of a hot plug module. Bealkowski discloses at column 4, lines 7-11 that the core logic includes a snoop filter 329 that is designed to limit the amount of snoop transactions between busses of any two processors. The snoop filter of Bealkowski appears to be limited to snoop transactions between busses of the processors. Further, Bealkowski does not disclose that the processors have hot plug capabilities. In other words, Bealkowski makes no mention of removing from or adding a processor to a running system. Accordingly, there is no need to update the Bealkowski snoop filter 329 of the running computing device to cease snooping of the hot plug module since the snoop filter 329 is limited to non-hot plug modules of the Bealkowski system.

Despite Bealkowski disclosing a snoop filter 329, the Official Action at page 3 appears to rely on the disclosed Partition Descriptor as a teaching of a snoop filter by citing Bealkowski FIG. 8A, steps 820-825, col. 10, lines 1-18. However, the Partition Descriptor merely allocates PCI slots of the system to partitions of a physically partitioned computer system. See, Bealkowski FIG. 5, and col. 9, lines 14-24. A snoop filter, on the other hand, is a cache coherency mechanism that tracks cache line information in an attempt to reduce snoop latency and/or the number of snoop transactions between caching agents of a computer system. See paragraphs [0031]-[0036] of Appellant's application. The Partition Descriptor of Bealkowski is not a cache coherency mechanism nor does it track cache line information in an attempt to reduce snoop latency and/or the number of snoop transaction between caching agents. Accordingly, one skilled in the art simply would not regard the Partition Descriptor as a snoop filter, especially in light of Bealkowski describing a system having a snoop filter 329.

Further, the Official Action mailed January 1, 2005 appears to mix and match features of Bealkowski to arrive at a system not taught by Bealkowski. In particular, the instant Official Action on pages 10 and 11 appears to rely on the snoop filter 329, the hot plug features of the PCI slots, and the disabling of a PCI slot when removed. An issue with this reasoning is that PCI devices and therefore the PCI slots are not caching agents by definition of the PCI standard. Accordingly, the PCI slots and associated devices do not cache memory lines. The Bealkowski system would not send snoop transaction to the PCI slots nor would the Bealkowski snoop filter 329 track status of the PCI slots based merely on the technological aspects of the PCI standard. Further, Bealkowski does not appear to disclose that the snoop filter 329 is updated based upon the addition or removal of PCI slots. In fact, the snoop filter 329 plays such an unimportant role in the invention of Bealkowski that the snoop filter 329 is only mentioned in the paragraph found

at column 4, lines 5-12. In this paragraph, Bealkowski discloses that the snoop filter 329 is "designed to limit the amount of snoop transactions between the busses of any two processors." which appears to be the only disclosure related to the functionality of the snoop filter 329.

Since Bealkowski does not disclose updating a snoop filter of a running computing device to cease snooping of a hot plug module, Bealkowski does not anticipate the invention of Appellant's claim 1. Appellant respectfully requests the rejection of claim 1 be withdrawn.

Claims 2-6

Each of claims 2-6 includes claim 1 as a base claim. Accordingly, each of claims 2-6 is allowable for at least the reasons stated above in regard to claim 1. Moreover, each of claims 2-6 includes additional limitations not taught by Bealkowski. For example, Bealkowski does not disclose updating the snoop filter 329 to indicate that a hot plug module is not a valid snooping agent (claims 2-3); or disabling a snoop filter associated with a hot plug module (claim 4). Bealkowski also does not disclose marking all cache lines tracked by the snoop filter 329 as not being present in the hot plug module (claim 5), or updating presence vectors to indicate that associated cache lines are not present in the hot plug module (claim 6). As mentioned above, Bealkowski contains only a single sentence regarding the functionality of the snoop filter 329 and that single sentence does not teach any of the above identified limitations.

Bealkowski does not anticipate the invention of Appellant's claim 2-6. Appellant respectfully requests the rejection of claim 2-6 be withdrawn.

Claim 7

Appellant's invention of claim 7 requires a switch to cease issuing snoop transactions to a coupler of the plurality of couplers associated with a hot plug module to be removed from the

running computing device. As indicated above, Bealkowski only teaches that the snoop filter 329 filters snoop transactions associated with the processors and does not teach removing the processors from a running computer system. Accordingly, Bealkowski only teaches issuing snoop transactions to non-hot plug modules (e.g. processors) and filtering snoop transactions from non-hot plug modules. Bealkowski appears to provide no teaching of issuing snoop transactions to hot plug modules, and therefore provides no teaching of ceasing the issuance of snoop transactions to couplers associated with hot plug modules as required by Appellant's claim 7.

Bealkowski therefore does not anticipate the invention of Appellant's claim 7. Appellant respectfully requests the rejection claim 7 be withdrawn.

Claims 8-12

Each of claims 8-12 includes claim 7 as a base claim. Accordingly, each of claims 8-12 is allowable for at least the reasons stated above in regard to claim 7. Moreover, each of claims 8-12 includes additional limitations not taught by Bealkowski. For example, Bealkowski does not disclose a switch that causes a hot plug module to write modified cache lines to a memory (claim 8); a switch that issues snoop transactions only to couplers with valid snooping agents (claim 9); a switch that comprises presence vectors associated with cache lines of a hot plug module (claim 10); a switch that comprises a separate snoop filter 329 for each coupler; (claim 11); or switches that collectively track states of cache lines of hot plug modules (claim 12).

As stated above, the only hot-plug modules disclosed by Bealkowski are the PCI slots. PCI slots and their associated PCI devices do not maintain cache lines that need to be tracked or written back to memory when removed. Accordingly, the above identified limitations are not

relevant to the PCI slots or PCI devices. Bealkowski therefore does not anticipate the invention of Appellant's claim 8-12. Appellant respectfully requests the rejection of claim 8-12 be withdrawn.

Claim 13

Appellant's invention of claim 13 requires causing caching agents associated with a coupler of the computing device to write back modified lines to a memory of the computing device, and updating a valid vector to indicate that the coupler is no longer associated with one or more valid caching agents. The Official Action appears to be relying on PCI agents disclosed by Bealkowski for a teaching of one or more caching agents. However, Bealkowski provides no indication that the PCI agents actually cache lines of a memory, let alone, modify cache lines and write back modified lines to a memory as required by claim 13. One skilled in the art would not consider the PCI agents of Bealkowski as caching agents, especially since Bealkowski describes the snoop filter only in terms of the processors and does not indicate that the PCI agents write back modified lines to memory prior to being removed from a partition.

Bealkowski therefore does not anticipate the invention of claim 13. Appellant respectfully requests the rejection claim 13 be withdrawn.

Claims 14-16

Each of claims 14-16 includes claim 13 as a base claim. Accordingly, each of claims 14-16 is allowable for at least the reasons stated above in regard to claim 13. Moreover, each of claims 14-16 includes additional limitations not taught by Bealkowski. For example, Bealkowski does not disclose updating a valid vector to indicate that a coupler is no longer associated with one or more caching agents in response to a hot plug event (claim 14); updating a

valid vector to indicate that another coupler is now associated with one or more valid caching agents in response to a hot plug addition request (claim 15); or clearing a bit of a valid vector to indicate that a coupler is no longer associated with one or more valid caching agents (claim 16).

As stated above, the only hot-plug modules disclosed by Bealkowski are the PCI slots. PCI slots and their associated PCI devices do not maintain cache lines that need to be tracked or written back to memory when removed. Accordingly, the above identified limitations are not relevant to the PCI slots or PCI devices. Further, the only caching agents disclosed by Bealkowski are the processors 101, 102 which are not hot-pluggable, and thus do not take the above identified actions in response to hot plug events. For the above reasons, Bealkowski does not anticipate the invention of Appellant's claim 14-16. Appellant respectfully requests the rejection of claim 14-16 be withdrawn.

Claim 17

The system of claim 17 requires a hot plug module comprising one or more caching agents having cached lines of the memory, and requires a processor to cause a snoop filter to mark the one or more caching agents as invalid snooping agents in response to a request to remove the hot plug module. Bealkowski does not disclose a hot plug module having one or more caching agents. In particular, the hot plug PCI agents of Bealkowski are not caching agents. Further, Bealkowski does not disclose updating a snoop filter to mark the one or more caching agents of the hot plug module as invalid snooping agents. The snoop filter 329 of Bealkowski only deals with non-hot plug modules (e.g. processors).

Bealkowski therefore does not anticipate the invention of claim 17. Appellant respectfully requests the rejection claim 17 be withdrawn.

Claims 18-21

Each of claims 18-21 includes claim 17 as a base claim. Accordingly, each of claims 18-21 is allowable for at least the reasons stated above in regard to claim 17. Moreover, each of claims 18-21 includes additional limitations not taught by Bealkowski. For example, Bealkowski does not disclose a hot plug module comprising a processor and one or more associated memory caches (claim 20); or a hot plug module comprising an input/output hub and one or more associated memory caches (claim 21).

Bealkowski does not anticipate the invention of Appellant's claim 18-21. Appellant respectfully requests the rejection of claim 18-21 be withdrawn.

Claim 22

The snoop filter 329 of Bealkowski is not updated in response to a request to remove a hot plug module. Further, the Partition Descriptor does not store coherency information for lines cached by caching agents of the hot plug module. Bealkowski therefore does not anticipate the invention of claim 22 which requires storing coherency information for lines cached by caching agents of hot plug modules. Appellant respectfully requests the rejection claim 22 be withdrawn.

Claims 23-27

Each of claims 23-27 includes claim 22 as a base claim. Accordingly, each of claims 23-27 is allowable for at least the reasons stated above in regard to claim 22. Moreover, each of claims 23-27 includes additional limitations not taught by Bealkowski. For example, Bealkowski does not disclose a controller of a snoop filter that updates coherency information in response to a request to add a hot plug module (claim 23); or a controller of a snoop filter that

updates coherency information in response to a request to remove a hot plug module. (claims 24-27).

Bealkowski does not anticipate the invention of Appellant's claim 23-27. Appellant respectfully requests the rejection of claim 23-27 be withdrawn.

CONCLUSION

In view of the foregoing, favorable reconsideration and reversal of the rejections is respectfully requested. Early notification of the same is earnestly solicited. If there are any questions regarding the present application, the Examiner and / or the Board is invited to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

7/5/05
Date

Gregory D. Caldwell
Reg. No. 39,926

Blakely, Sokoloff, Taylor & Zafman, LLP
12400 Wilshire Boulevard, 7th Floor
Los Angeles, CA 90025-1030
(503) 439-8778

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Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450

On: July 5, 2005
Signature RCB 7/5/05
Rachael Brown Date

(viii) Claims appendix.

What is claimed is:

1. (Original) A method comprising

receiving a request to remove a hot plug module from a running computing device; and

updating a snoop filter of the running computing device to cease snooping of the hot plug module.

2. (Original) The method of claim 1 wherein updating comprises updating the snoop filter to indicate that the hot plug module is no longer a valid snooping agent.

3. (Original) The method of claim 1 wherein updating comprises updating a valid vector to indicate that the hot plug module is not a valid snooping agent.

4. (Original) The method of claim 1 wherein updating comprises disabling the snoop filter associated with the hot plug module.

5. (Original) The method of claim 1 wherein updating comprises marking all cache lines tracked by the snoop filter as not being present in the hot plug module.

6. (Original) The method of claim 1 wherein updating comprises updating presence vectors to indicate that associated cache lines are not present in the hot plug module.

7. (Original) A midplane comprising

a plurality of couplers to detachably couple hot plug modules to a running computing device; and

a switch to interconnect the plurality of couplers and to cease issuing snoop transactions to a coupler of the plurality of couplers associated with a hot plug module to be removed from the running computing device.

8. (Original) The midplane of claim 7 wherein the switch causes the hot plug module to be removed to write modified cache lines to a memory of the running computing device.

9. (Original) The midplane of claim 7 wherein

the switch comprises a valid vector, and

the switch issues snoop transactions only to couplers that the valid vector indicates are associated with valid snooping agents.

10. (Original) The midplane of claim 7 wherein

the switch comprises presence vectors associated with cache lines of the hot plug module to be removed, and

the switch updates the presence vectors to indicate that the hot plug module does not have copies of the associated cache lines.

11. (Original) The midplane of claim 7 wherein

the switch comprises a different snoop filter for each coupler of the plurality of couplers, and

the switch disables the snoop filter for the coupler associated with the hot plug module to be removed.

12. (Original) The midplane of claim 7 further comprising another switch to interconnect the plurality of couplers, wherein the switches collectively track states of cache lines of hot plug modules coupled to the couplers and cease to issue snoop transactions to the coupler associated with the hot plug module to be removed.

13. (Previously Presented) A machine readable medium for processing snoop transactions comprising a plurality of instructions that in response to being executed result in a computing device

causing caching agents associated with a coupler of the computing device to write back modified lines to a memory of the computing device; and

updating a valid vector to indicate that the coupler is no longer associated with one or more valid caching agents.

14. (Original) The machine readable medium of 13, wherein the plurality of instructions in response to being executed further result in the computing device

updating the valid vector in response to a hot plug removal request.

15. (Original) The machine readable medium of 14, wherein the plurality of instructions in response to being executed further result in the computing device

updating the valid vector to indicate that another coupler of the computing device is now associated with one or more valid caching agents in response to a hot plug addition request.

16. (Original) The machine readable medium of 15, wherein the plurality of instructions in response to being executed further result in the computing device

clearing a bit of the valid vector that is associated with the coupler to indicate that the coupler is no longer associated with one or more valid caching agents, and

setting another bit of the valid vector that is associated with the another coupler to indicate that the another coupler is associated with one or more valid caching agents.

17. (Previously Presented) A computing device comprising,

a memory,

a hot plug module comprising a coupler and one or more caching agents having cached lines of the memory;

a midplane comprising a coupler detachably coupled to the coupler of the hot plug module and a snoop filter to track the cached lines of the one or more caching agents; and

a processor coupled to the hot plug module via the midplane, the processor to cause the snoop filter to mark the one or more caching agents as invalid snooping agents in response to a request to remove the hot plug module.

18. (Original) The computing device of claim 17, wherein

the hot plug module comprises a mechanism to generate the request to remove the hot plug module.

19. (Original) The computing device of claim 17, wherein the memory comprises a plurality of instructions that in response to being executed result in the request to remove the hot plug module being generated.

20. (Original) The computing device of claim 17, wherein the one or more caching agents comprises a processor and one or more associated memory caches.

21. (Original) The computing device of claim 17, wherein the one or more caching agents comprises an input/output hub and one or more associated memory caches.

22. (Original) A snoop filter comprising

storage to store coherency information for lines cached by caching agents of hot plug modules; and

a controller to update the coherency information in response to a request to remove a hot plug module from a computing device.

23. (Original) The snoop filter of claim 22 wherein the controller further updates the coherency information in response to a request to add a hot plug module to the computing device.

24. (Original) The snoop filter of claim 22 wherein the controller updates the coherency information to indicate that the hot plug module is no longer a valid snooping agent in response to the request to remove the hot plug module.

25. (Original) The snoop filter of claim 22 wherein the controller updates a valid vector of the coherency information to indicate that the hot plug module is no longer a valid snooping agent in response to the request to remove the hot plug module.

26. (Original) The snoop filter of claim 22 wherein the controller updates the coherency information by marking all tracked cache as not being present in the hot plug module in response to the request to remove the hot plug module.

27. (Original) The snoop filter of claim 22 wherein the controller updates the coherency information by updating presence vectors to indicate that associated cache lines are not present in the hot plug module in response to the request to remove the hot plug module.

(ix) Evidence appendix.

None.

(x) Related proceedings appendix.

None.